

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 October 2003 (09.10.2003)

PCT

(10) International Publication Number
WO 03/082327 A2

(51) International Patent Classification⁷: **A61K 39/00**,
39/39, 48/00

(74) Agent: HUYGENS, Arthur, V.; Octrooibureau HUY-
GENS, P.O. Box 86, NL-3400 AB IJsselstein (NL).

(21) International Application Number: PCT/EP03/03353

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 28 March 2003 (28.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02076276.1 28 March 2002 (28.03.2002) EP
03075383.4 10 February 2003 (10.02.2003) EP

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **BRENTAG BIOSECTOR A/S** [DK/DK]; Elsenbakken 23, DK-3600 Frederikssund (DK).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **REIMANN, Hansjörg** [DE/DE]; Ringstrasse 88, 89081 Ulm-Lehr (DE). **SCHIRMBECK, Reinhold, Alois** [DE/DE]; Danzigerstrasse 13, 36381 Krumbach (DE). **LINDBLAD, Erik, B.** [DK/DK]; Frederiksberg Alle 19 B, DK-1820 Frederiksberg (DK).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMBINED DNA/PROTEIN VACCINE COMPOSITIONS

(57) Abstract: The present invention relates to a novel, combined DNA/Protein antigen vaccine composition comprising nucleic acid molecules and a mineral-based, negatively charged adjuvant, so as to enhance the immunogenicity of the DNA vaccine efficiently enhancing not only plasmid DNA vaccines but also providing a novel strategy for immunogenic, multivalent combined protein/DNA vaccine delivery. Preferred adjuvants are aluminium or calcium salts, in particular aluminium phosphate.

WO 03/082327 A2